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Cover page

It's cotton picking, cotton classing time again, for America's broad fields are once more a tideless sea of fleecy white gold. And every cotton farmer who filed his application in good time for the classification and market news services provided each year by the Agricultural Marketing Service, under the Smith-Doxey Act, can again count on the benefits of this invaluable service.

Cotton improvement groups request this popular service each year. Last year, in fact, over 95 percent of that season's crop was classified under this Act. As each bale of cotton is classed in one of AMS's 40 cotton classing offices scattered throughout the country, a green card is issued showing that bale's correct grade and staple length. By knowing the grade and staple of their cotton, farmers are able to "shop around" and compare the current market quotation they can get for their cotton, against the price offered under the Government's price support program.

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About 60 percent of the agricultural workers in the Soviet Union are women. Soviet agriculture has one worker for about 15 acres of cropland, whereas in the United States there is an average of about 60 cropland acres per farmworker. The Russians need a farm labor force 6½ times bigger than ours—or about 45 percent of the available Russian labor—to supply a 20 percent larger population.

An Agricultural Comparison:

UNITED STATES and SOVIET UNION

By RICHARD E. BELL

AMONG the more interesting Soviet challenges of recent years is the boast that they "would bury" the United States with their output.

If farm productivity is any measure, the prospect is something less than imminent, according to foreign-area analysts in the Economic Research Service.

The United States and the Soviet Union are two of the world's leading agricultural producers. Together they account for more than a quarter of the world's farm output. Soviet production in 1958—a record year for the Russians—was about 11 percent of world output.

However, American production in the same year was more than half again as much. And on a per capita basis, the Soviets compared even less favorably with the United States.

The Kremlin, in effect, is learning that being big is not enough.

The U.S.S.R. had 501 million acres of sown cropland in 1960: The United States, 329 million. Russia's 53,400 collective farms averaged 6,785 sown acres. Their 6,500 state farms sprawled over an average of 22,485 sown acres. The average collective embraced 386 households while the state farms harbored a community of 753 workers.

The United States, by contrast, prefers the many, the small, and the efficient in farm units.

This country had over 3.7 million farms in 1960, with about two-thirds of them accounting for almost all farm sales. These commercial farms were, by and large, family owned, averaging 409 acres apiece, with 1 to 2 workers per farm.

Yet, despite his scattered and relatively small-scale plant, the American farmer succeeds in supplying 182 million Americans with most of their food and fiber, with enough left over to export one-sixth of his cropland output. And he makes up only 9 percent of the total labor force. The Russians, on the other hand, need a farm labor force 6½ times bigger than ours—or about 45 percent of the available Russian labor—to supply a popu-

lation which is only 20 pereent greater.

All of whieh means that the Russians still must devote a major part of their available labor to providing for the basie necessities of food and clothing—a job the Amerieaan farmer solved generations ago without benefit of Marxist doetrine.

The faets of their own farm system, whether or not the Soviets admit it, indieate that individual initiative—called private enterprise in eapitalistie eireles—has its plaee in agriculture.

Individual farmers, acting on their own initiative, eontribute a healthy and even vital part of the total Soviet farm output. The small "household" plots permitted to collective farmers and other workers, together amount to only about 3 percent of the total sown aereage. But, as reeently as 1959, these plots yielded half the green vegetables and two-thirds of all potatoes grown in the U.S.S.R. Despite pressure to limit private ownership of livestoek, the individual farmer in 1959 supplied nearly half the meat and milk for the country and over four-fifths the eggs.

Geography is one of the prineipal eurbs on Russian production. Almost all of the U.S.S.R. is farther north than the southern border of Minnesota and much of the farm land is in arid eountry.

As for meehanization, in 1960 the Soviets had one tractor for every 485 aeres of sown eropland; the U.S. had a traetor for every 70 acres.

The two countries differ not only in the quantity of their output and teehnology, but in the kinds of eommodities produeed as well.

The Russian output of food grains in 1960 was 50 percent greater than the U.S., but their produetion of all grains was only about half as mueh as ours—even less on a per capita basis.

Total U.S. grain outturn during 1960 was about 200 million short tons eompared with an estimated 110 million short tons for the Soviet Union. Last year corn production alone in the U.S. was almost as great as total grain production in the Soviet Union, with feed grain produetion almost four times that of the U.S.S.R.

More feed grain in the U.S. makes for a far greater output of livestock products. The U.S. produces twiee as mueh red meat as the Soviet Union, four times the amount of poultry, two and a half times the number of eggs, and about 10 pereent more milk.

On the other hand, the U.S.S.R. had a higher output of butter, partly beeause of the Ameriean use of margarine. The Soviets also have four times as many sheep as we do and their annual wool elip is more than double the U.S. level.

Poor transportation hobbles the Soviet marketing system. With a land area two and a half times the U.S., the Soviets have only one-sixteenth as mueh paved highway.

Marketing follows the same pattern of state control as production. All output of the state farms and most of the production from colleetives is bought by the government at fixed priees and distributed through state stores.

But, despite the Soviet preference for state eontrol, private enterprise, though severely restricted, is a persistently important part of the marketing system.

Anything produeed by the colleetives in exeess of their assigned quotas may be sold in the "free" markets on the colleetive farms along with the output of household plots and privately owned livestock.

Prices in these markets follow supply and demand, more or less, and are generally higher than in state stores. But quality is better and, often as not, the products are unavailable through government outlets.

Sinee the death of Stalin in 1953 the Soviets have pushed a erash program for inereasing agricultural output, adding over 115 million acres of cropland to their farming area. Mueh of this land, however, is marginal. The Russians have, apparently, just about reaehed the limit of agrieultural expansion through added acreage, and future inereases will depend on their eapabilities for intensive, rather than extensive develoPment.

Given the natural resourees and the farm and marketing system of the Soviet Union, the chanees of the Russians eatehing up with the United States remain remote, to say the most.

The U.S.S.R. has a wide gap to close to attain U.S. levels of farm production, and an even wider one to equal the produetivity of the Ameriean farmer.

The author is a staff member of the Regional Analysis Division, Economic Research Service. A more detailed comparison of U. S. and Soviet agrieulture may be found in the report ERS-Foreign-9. Copies are available from the Division of Information, Agricultural Economies, USDA, Washington 25, D. C.

These combines harvesting wheat are one of the reasons why our farmers, who make up only 9 percent of the total U. S. labor force, can supply 182 million Americans with most of their food and fiber, with enough left over to export one-sixth of their cropland output.

School broiler-fryer purchase puts a good protein food on school lunch tables and at same time, broadens the market for chicken.

USDA Purchases Broilers-Fryers for

School Lunches

THERE'S nothing better than crunchy fried chicken to satisfy hearty appetites. And school children all across the country are getting their share this fall—along with a variety of other nutritious farm foods purchased especially for them.

School lunch officials at the U.S. Department of Agriculture have been busy buying foods for schools participating in the National School Lunch Program.

The chicken is an excellent illustration of how the Program plays a dual role. Its purchase puts a good protein food on lunch tables at a very reasonable cost—and, at the same time, helps broaden the long-range market for chicken.

Market analyses show that after the donated supply of any acceptable food is served successfully to the children, the local school lunch buyer and menu planner continues to purchase the product in local markets.

The abundant supply of chicken has brought the price to where it can be featured frequently in school lunches. No longer need it be served only as a holiday treat.

The recent purchase of broiler-fryers for the School Lunch Program is a direct outgrowth of an experimental purchase made last March. At that time, school lunch officials weren't sure the industry could supply young chickens cut up and packaged in such a way that they could be used successfully in the School Lunch Program.

The experimental purchase helped develop weight and package specifications. It also proved to lunch officials that chicken would be well accepted by both lunch room managers and the children.

According to specifications, these chickens ranged in weight from 2¼ to 2½ pounds—without necks. Each bird was cut into ten pieces, and 12 birds were packed in a box, giblets included. Only U.S.-inspected and U.S. Grade A birds were accepted.

Besides broiler-fryers, USDA has been letting bids and purchasing a broad variety of other commodities for schools participating in the National School Lunch Program. Even before classes began this fall, contracts had been let for canned apricots, peaches, peas, beans, and other fruits and vegetables.

Obviously, these foods can provide only a few servings per child when spread among nearly one-third of the Nation's total school enrollment. By far—at least 80 percent—of the foods used in schools are bought locally, to the tune of nearly $600 million annually.

Federal donations, however, go a long way toward helping the schools meet the basic requirements of the Type A lunch.

Under the National School Lunch Program, each school must serve a lunch containing at least 2 ounces of high-protein food; one-half pint of milk; three-fourths cup of vegetables or fruit; bread and butter. These lunches, with portions adjusted to the age and needs of the children, provide one-third of the daily food requirements of a school child.

This is the purpose of the National School Lunch Program—"to safeguard the health and well-being of the Nation's children and to encourage the domestic consumption of nutritious agricultural commodities and other food."

Funds for commodity assistance are allocated under Section 6 of the National School Lunch Act, which allows USDA to purchase foods of high nutritional value for school lunches. The Act also provides the school with funds to help purchase other such foods locally.

Each school in the program must serve a lunch containing at least 2 ounces high-protein food, half pint of milk, three-fourths of a cup of vegetables or fruit, butter, and bread. Lunches provide a third of food requirements for a school child for one whole day.

USDA Grade Mark Offers Consumers Quality Assurance for

CHEDDAR CHEESE

By EDWIN F. GARBE

WHETHER you like it mild, mellow, or sharp, you probably look for a certain flavor in Cheddar cheese.

If you're disappointed to find that the flavor varies from time to time, even when you repeatedly buy the same type and brand of Cheddar cheese, then here is news:

One cheese plant has now standardized its manufacturing procedure to the extent that it can consistently turn out Cheddar cheese in all three curing categories of such dependable flavor and outstanding quality that most of it will qualify as U.S. Grade AA—the highest official grade.

Accordingly, this plant, the Lake to Lake Dairy Cooperative, of Manitowoc and Kiel, Wisc., is the first to be authorized by USDA to label consumer packages of cheese with the U. S. Grade AA shield.

This authorization marks a real breakthrough in the centuries-old art of cheese making. It is just because its manufacture is an art, rather than a science, that Cheddar cheese has always been such a variable product.

But about three years ago the management of the Lake to Lake cooperative—and that of the marketing cooperative, Land O' Lakes Creameries, Inc., Minneapolis, Minn., through which Lake to Lake markets much of its production—got together with representatives of the Dairy Division of USDA's Agricultural Marketing Service, the agency responsible for standardization and grading of dairy products, to find an answer to this question:

"Why can't we use the U. S. grade mark—the hallmark of butter quality—to bolster consumer confidence and acceptance of Cheddar cheese?" (Land O' Lakes, incidentally, was one of the pioneers in the establishment some 35 years ago, of USDA's grade labeling program for butter).

"No reason at all," Dairy Division specialists replied, "if you can produce cheese that will really earn the grade mark. The grade mark would have to mean the same thing for cheese as it does for butter—dependable flavor, quality, and stability (keeping ability). You provide the cheese—we'll provide a grade labeling program. And we'll help in any way we can with problems involved in getting your cheese production to the point where it will qualify for the U. S. grade mark."

Samples of cheese from different vats were graded. As is the case with most Cheddar cheeses, they displayed a good deal of variability from one vat to another. No doubt about it—there *were* some problems to be overcome.

So began a three-year-long effort on the part of the Lake to Lake plant and personnel in the Inspection and Grading Branch of the Dairy Division. During this period, all of the facets of cheese-making were carefully examined and evaluated:

How was the quality of the milk supply? Did the plant have an effective milk grading program?

How about "make" procedures? What kind of "starter" (culture of acid-forming bacteria) was used? Would different strains produce better flavor—improve the cure?

The Lake to Lake Dairy Cooperative of Manitowoc and Kiel, Wisconsin, is first plant authorized by USDA to label consumer packages of cheese with U.S. Grade AA shield.

Dairy plant survey by USDA inspector is a requirement under grade labeling program for Cheddar cheese. User pays a fee for this survey. Here milk cans are checked for rust, open seams.

And what levels of temperature and humidity were maintained in the curing rooms? Would different levels improve the cure?

And then that *sine qua non* for the manufacture of any dairy product—sanitation. Were there any weak spots there?

A thorough plant survey by a USDA dairy products inspector was the first order of business. Such a survey involves checking some 120 different items—things like milk cans, pipe lines, pumps, ... even the floors, walls, and ceiling—to see if proper hygienic measures are being employed and if satisfactory procedures are being used. This plant survey is a voluntary service for which, like grading services, the user pays a fee.

Patiently, month after month, plant personnel worked to improve their cheese manufacturing techniques. They experimented with different "starters" and different combinations of "starters." They tried different combinations of temperature and humidity in curing. And throughout the period, samples of cheese from different vats were sent to the Dairy Division laboratory in Chicago, where technicians analyzed the cheese and from the test results suggested improvements in "make" techniques.

The U. S. Grade AA mark assures consumers that the cheese they are purchasing is of dependable flavor and outstanding quality.

At least every three weeks, the USDA grader would visit the plant to grade the cheese in the curing rooms—the current cheese and product that had been curing for three months, six months, and nine months to see if it measured up to the USDA standard for Grade AA.

Finally, after more than two years of experimenting, testing, grading, the Lake to Lake management hit upon the method it was seeking. Time after time, it was able to produce cheese of the same good flavor and good keeping quality, in all curing categories—and practically all of it measured up to the requirements for U.S. Grade AA. To do this, it had to meet exacting standards, not only for flavor, but also for body and texture, color, and finish and appearance.

By the time the plant had achieved this goal, the dairy cooperative and USDA personnel had worked out the details of an official grade labeling program for Cheddar cheese. And this program is available to any other cheese factories that can qualify.

Essentially, these are the requirements:

1. Quarterly plant surveys to assure production under sanitary conditions.

2. Strict requirements for quality of milk supply.

3. Satisfactory "make" procedure.

4. Sufficient history of manufacture of cheese of a quality consistent with the U. S. grade under which it is to be packaged. This could take as long as 12 to 24 months for a "new" operation.

5. Adequate production of product that will consistently meet the requirements or characteristics for the various curing categories.

6. Official grading of each lot of cheese to be labeled with the U. S. grade mark. Curing category would also be required on the label.

For uniform application and usage, USDA dairy products specialists, in developing the grade labeling program, have established the following curing designations:

Mild—cheese which has been partly ripened or cured and which possesses a mild or slightly characteristic Cheddar flavor, is partially broken down in body, and is not tough or rubbery. Cheese with these characteristics is generally ripened or cured for two to three months.

Mellow-Aged—cheese which has been moderately ripened or cured and which possesses a medium developed characteristic Cheddar flavor and a reasonably smooth, pliable body. Cheese with these characteristics is generally cured or ripened for 4 to 7 months.

Sharp—cheese which has been well ripened or cured and which possesses a fully developed characteristic Cheddar flavor and a smooth, waxy body. Cheese with these characteristics is generally ripened or cured for 8 to 12 months.

A fourth category, extra sharp, is under consideration and may be included in the grade labeling program.

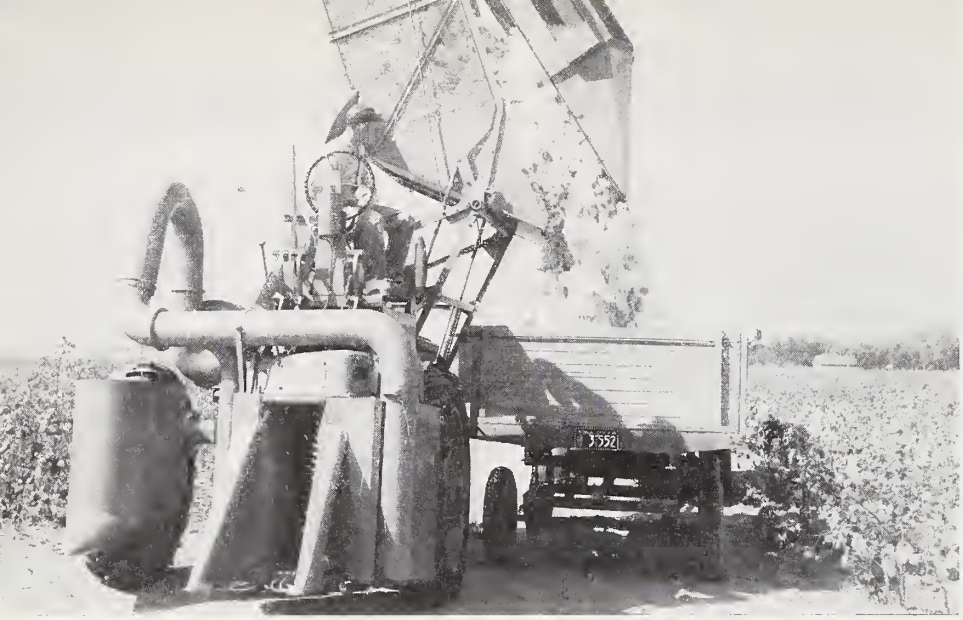
Lake to Lake cheese—mild, mellow-aged, and sharp—is now being marketed under both the Lake to Lake and Land O'Lakes brand names, both labels carrying the USDA Grade AA mark.

The Lake to Lake brand is sold principally in Wisconsin. Cheese carrying the Land O'Lakes label is being marketed wherever the same brand of butter is sold—chiefly east of the Mississippi, but also in some cities farther west, such as Dallas, Houston, St. Louis, and Minneapolis.

Several other cheese makers have expressed interest in qualifying for the grade labeling program. Until such time as a number of cheese plants do qualify, the supply of Cheddar cheese carrying the U. S. grade mark will necessarily be limited.

But USDA dairy products specialists are confident that the time will not be too long in coming and that when it does, it will not only be a boon to consumers but it could also help expand markets for cheese to the benefit of dairy farmers and others in the dairy industry.

The author is Assistant Chief, Inspection and Grading Branch, Dairy Division, AMS.



Different Grades of Cotton From the Same Trailer

WHY ARE two or more bales from the same trailer of seed cotton sometimes different in grade or staple length? Cotton farmers find this difficult to understand, especially when the cotton was all harvested the same day from a single field.

Anything which affects cotton's rate of growth and maturity, from planting to harvesting, can cause quality variations. A cotton field may contain several types of soil. High and low spots, whether due to the natural terrain or terracing, mean that some plants will get more water and plant food than others. Cotton planted in the shady parts of a field cannot mature at the same rate as that which receives more direct sunlight. Even a dirt road can cause quality variations, since dust may blow on open cotton next to the road but miss the more distant parts of the field.

Mixed planting seed will almost certainly yield different qualities of cotton. If spot replanting is necessary, the cotton planted last may mature later and differ in quality from the early cotton.

Poor timing in the application of fertilizer or insecticides, or failure to apply them evenly, may cause big differences in the rate of plant growth and extent of insect damage. The amount of grass and weeds in different parts of a field may vary extensively due to cultivation practices or natural conditions.

Good harvesting practices are very important in keeping quality variations to a minimum. Dirty trailers or excessive tramping of cotton in a trailer may cause trash to be difficult or impossible to remove.

The amount of moisture in seed cotton when it goes to the gin affects the efficiency of cleaning and drying equipment, so wet and dry cotton should not be mixed. A morning dew will disappear after a few hours in the sun. Therefore, cotton picked early in the day will have more moisture. Rank cotton stays wet longer. A trailer should always be covered if rain begins in order to keep the load from getting wet.

The amount of trash in cotton depends a great deal on whether it is hand picked, hand pulled, hand snapped, machine picked or stripped. Cotton harvested by different methods should never be placed in the same trailer. Careless workers will get more leaf and trash in the cotton they harvest. Mechanical harvesters tend to blow light clean cotton to the rear of the trailer, while heavy, trashy, or wet cotton tends to fall in front.

Poor ginning practices can easily result in different grades of cotton from one trailer, even when the seed cotton was uniform. Ginning too fast may cause excessive overflow and choke up machinery. Cotton run back through the overflow pipe may receive extra cleaning unless the ginner remembers and takes the time to bypass overhead cleaners. Ginners may bypass drying and cleaning equipment if they are choked up, in order to maintain the rate of ginning during rush periods. Feeding too fast often causes a tight seed roll in gin stands, which will turn out a different quality of cotton from those fed at normal speeds. Enough time must be allowed for a clear separation between trailers and between bales, or inferior cotton from one bale may appear as a thin layer, or plate in the next one.

Farmers can help prevent these occurrences by allowing the ginner sufficient time to do his job properly. After investing many months and dollars in a crop of cotton, it is poor business to take unnecessary losses by demanding faster service than the gin can provide when operating properly. It makes sense to wait a few more hours or days so that the ginner can do the best possible job.

USDA offers farmers free classing service. Cotton samples are classed for grade, staple length in comparison with official standards.

An Improved Packing Station for Citrus

TIME SAVED is money saved, in any industry's language. And right now that's particularly good news for citrus fruit packinghouses.

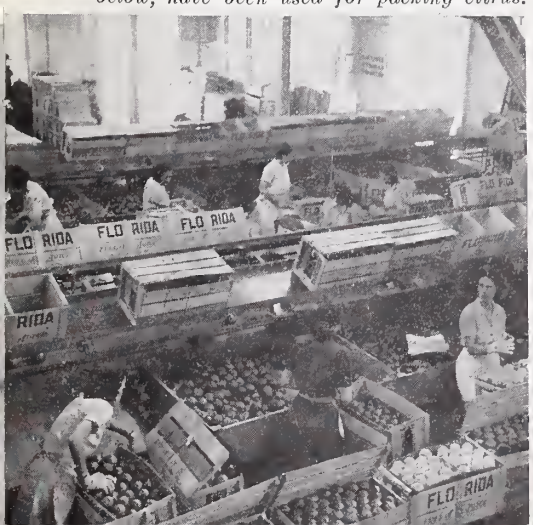
For marketing researchers Earl K. Bowman and G. E. Yost of USDA's Agricultural Marketing Service have come up with packinghouse tests which show that about a fifth of a fruit packer's time can be saved if a rollboard type packing station is used instead of bins in the place-packing of citrus fruit.

This is an especially valuable finding, since the fruit packer's wages are one of the largest single labor expenses which citrus packinghouses face.

Before these new methods were announced by the AMS researchers, most packinghouses place-packed fruit in shipping boxes. Each packer picked up individual fruit from accumulating bins as it rolled from a sizing machine and placed it in a shipping box.

Under that method, which has been most commonly used, the fruit discharged into a holding bin. The packer had to turn from the packing box to the bin and back again, resulting in wasted motion.

For many years the work stations, shown below, have been used for packing citrus.



AMS tests show that about a fifth of a fruit packer's time can be saved if a rollboard type of packing station is used instead of bins in the place-packing of citrus fruit.

AMS researchers' main problem was how to eliminate this wasted time. From a series of laboratory tests and tryouts in commercial packinghouses the rollboard place-packing station was developed, which proved quite successful.

Here's how it works:

The bin that ordinarily holds the fruit is replaced by a sloping board. The fruit is discharged from the sizing machine, rolls down the sloping board to a stop-board, and is placed in a shipping container by the packer.

This rollboard technique provides an improved motion pattern which eliminates the waste motion caused by the conventional method of place-packing fruit. The packing box is set up at the front edge of the rollboard at a satisfactory height so that the packer may stand facing the rollboard.

This packing method will easily adapt to existing facilities in most commercial packinghouses. The rollboards can be installed in combination with conventional bins, and be used with either the belt and roll fruit sizer or the central sizer.

Also, there is less chance of damage to the fruit when the rollboard is used. Often, fruit at the bottom of the conventional holding bin is not packed immediately, so it takes considerable punishment.

When the rollboard is used, only one layer of fruit is available to the packer. The fruit which comes from the sizer first is the first to be packed.

Eliminating waste motion in citrus fruit packinghouses is part of a continuous research program performed by AMS specialists. The long-term goals of the AMS marketing research effort are constantly improved facilities and better techniques throughout the food industry, resulting in better products for the consumer and bigger dividends to farmers.

This study was made in cooperation with the Citrus Experiment Station of the Florida Agricultural Experiment Station. A more detailed description of the place-packing station is available in the report AMS-447. A free copy may be obtained from the Marketing Information Division, AMS, USDA, Washington.

AMS marketing researchers find new ways

Drivers waiting for trucks to be loaded or bringing back part of their load because of delays are two practices that cost warehousemen money.

The dock is probably the most valuable square footage in the warehouse. All merchandise passes this limited area.

Cut Institutional Warehouse Delays

An empty pallet in the aisle of an institutional groeery warehouse is probably not an uneommon sight. But it's one of the eauses of delay that's costing warehousemen thousands of dollars every year.

As part of an overall program to reduce marketing costs, a team of AMS marketing researehers performed intensive tests in six institutional warehouses to study delay —its costs, causes, and cures.

Effieiency in the warehouses tested is considered by the industry to be above average. But in the four operations of truck receiving, order selection and checking, and loading delivery trucks, an average of 16 percent of their time was lost to delays. This cost one of the six firms over $9,000 a year in direet labor costs. The bill for the other firms amounted to $6,000 and over.

Of course, one empty pallet isn't the cause for all the trouble. It might be a symptom of several other problems. Perhaps the warehouse layout is poor; or equipment may be wrong for the operation; supervision may be poor or absent altogether; or the trouble may be in the coordination between departments.

Delays are not only costly in themselves; they are the breeding ground for a multitude of other ills: for instance, drivers waiting for their trucks to be loaded; eustomers complaining because groceries are not being delivered on time.

These situations waste time and money. But in most eases the employees involved have ittle or no eontrol. Because administrative deeisions dictate most of the operations, it has to be up to management to give employees the physical plant and procedures so they can do a more effieient job.

To aid this process of improvement, delays ean be grouped according to type and analyzed from there.

First is dock congestion which affects receiving, assembly, eheeking, and loading delivery trucks. In one of the firms, the men loading delivery trucks were delayed more than 11 percent of their time beeause of the eongested dock. This amounted to $460—for one man—on a yearly basis.

Since every case of merchandise has to pass through the limited dock area, the dock is probably the most valuable square footage in the warehouse. Certainly it's no plaee for delays. Marketing researchers found that by setting aside a holding area for assembled orders before they are loaded, a lot of tie-ups can be avoided.

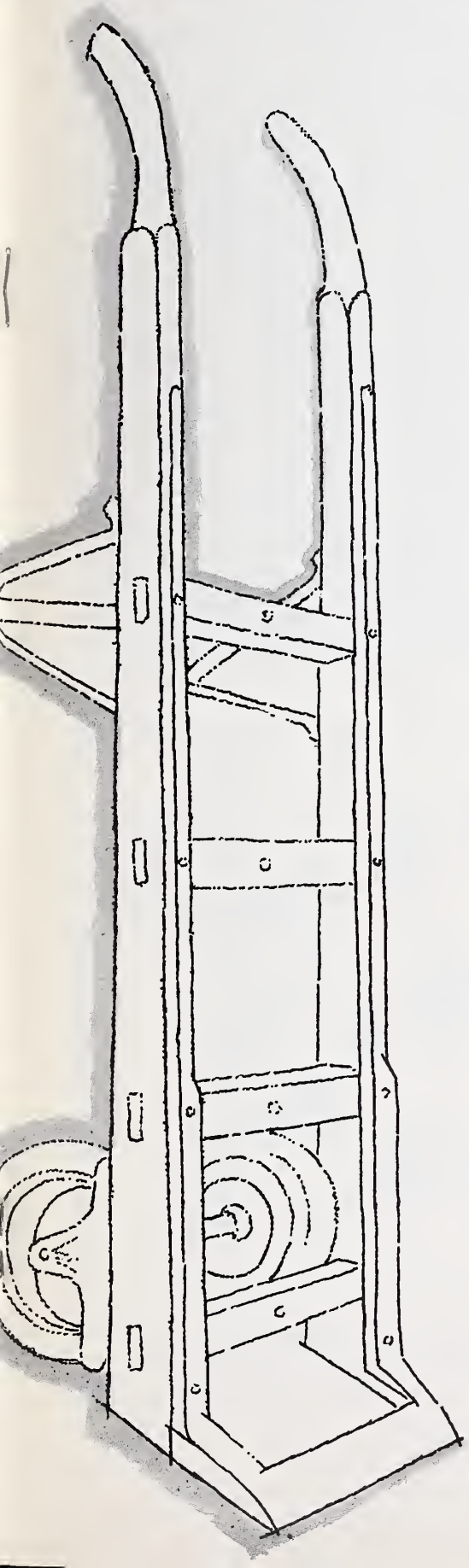
Congested docks also interfere with receiving and checking merchandise. In this case, orders could be selected in the sequence in which they are to be loaded.

Finally, dock congestion fouls up the delivery operations. Ideally, the truck should be ready to roll when the driver gets to work.

The next suspect in the delay lineup is waiting for work. In one of the firms studied, the man doing the truck-reeeiving work spent over a quarter of his time waiting for trucks. The firm paid almost $1,200 a year for the delay in the work of just this one man.

Waiting for invoices affects order selectors, whieh, in turn, holds up the loaders and drivers. The solution boils down to stricter schedul-

s to REDUCE FOOD DISTRIBUTION COSTS



ing of personnel, reducing delays in the warehouse, and having the truck ready for the driver when he gets to work.

The aisle block is the next culprit. A forklift operator receiving merchandise spent 3 percent of his time in delays caused by blocked aisles—at an annual cost of about $125.

To avoid aisle-blocking by loaded pallets, incoming merchandise should be put in one of three places: the selection slot, on top of the racks, or in reserve storage. Empties should be picked up periodically by the forklift operators.

Equipment difficulties add their share to the thousands of dollars wasted in warehouse delays. A forklift that doesn't quite reach the top rack, or a piece of string wrapped around the axle of a selector truck can cause many hours of wasted time and effort in the food distribution process.

Grouped according to function, the delay story has another angle. In the six firms tested, an average of 28 percent of their total truck-receiving time was eaten up by delays. Delays averaged about 16 percent of the order selection time, over 37 percent of order checking time, and 16 percent of the total time devoted to loading delivery trucks.

In the firm with the most delays in order checking, almost half the time spent in this operation was wasted!

Where are the results of delay found? Right where it hurts the most—on the profit and loss statement in the area between gross and net profit. A $100 gain in net profits, resulting from a $100 saving in warehouse labor costs, is the equivalent of a 2 percent profit on an additional $5,000 in sales.

It takes a lot of grocery sales to make up for the two or three minutes wasted by an empty pallet in the aisle.

This does not suggest eliminating efforts to increase sales. It just means that when warehouse operations aren't evaluated carefully, a lot of effort that *was* done on sales promotion can be cancelled out by just a little work that *should have* been done in the warehouse.

Make Two-Wheel Handtrucks Produce

IT DOES NOT necessarily take a magician to change red ink to black, particularly on a fruit and vegetable dealer's ledgers. Often it's just a matter of a few common sense changes in methods of operation that can spell the difference profit-wise.

As for these changes, here are some facts from a recent study of handling operations.

Small volume wholesalers in many parts of the Nation use the stevedore type two-wheel handtruck to handle fruits and vegetables. Yet a rearrangement of this equipment and labor use will show that productivity may be stepped up as much as 60 percent, and costs reduced by more than a third.

A method frequently used called for a crew that was assigned to the jobs of loading handtrucks, transporting the loads and hand-stacking them in storage. The particular objection to this was that the transporters waited in the carrier, losing time while their equipment was being loaded and again lost more time waiting at the storage point while it was being unloaded.

A 7-man crew using this method would be so organized that 2 men worked in the carrier loading handtrucks, 3 men transported loads of fruits and produce to storage, and 2 men worked in the storage area removing packages from the handling equipment and stacking them on the floor.

Under this plan, the cost of labor and equipment to receive and store one carload of lettuce amounted to $17.15. But a 4-man crew using the same method had one loader, two transporters and one stacker—yet the cost ran to $18.63 a carload.

Each handtruck carried six 40-pound packages, or a total of 240 pounds per trip. And the distance traveled was the same each way—100 feet—at a labor rate of $2 an hour.

A more productive method was

(continued on page 20)

Plant pathologists examine inoculation tests on a guinea pig test plant as part of California's cherry tree certification program.

California Cherry Tree Stock Wears **Superior Quality** *Identification Tags*

Above left, is a normal cherry leaf. The malformed cherry leaves, above right, resulted from infection by rasp leaf, one of the serious virus diseases excluded from certified cherry nursery stock. The small, malformed, and uncolored cherries shown in the first two rows suffer from buckskin disease. The last row shows normal, ripe cherry fruits.

By H. KEITH WAGNON and GILBERT L. STOUT

CALIFORNIA'S cherry trees now wear something besides their familiar pale flowers and luscious-looking fruit. For, since that State's 1959-60 marketing season, its nurserymen have been able to sell—for the second time—certified cherry trees carefully identified by official seals and tags.

This assures purchasers that the trees were produced under rigid State regulations aimed at excluding costly virus diseases and serious plant pests.

Participation by California nurserymen is voluntary, and the program is self-supporting through fees paid by the nurserymen. Producers of 98 percent of California's cherry tree nursery stock are already participating.

For a considerable time California's huge fruit industry has suffered great financial losses due to these virus hazards, so there has been urgent need for producing the healthiest stock possible.

But the technical know-how has been slow in coming because the study of viruses and how to avoid them has proven difficult. And this study, so far as cause and cure are concerned, can still be said to be in its infancy.

The obstacle facing nurserymen today is that some harmful viruses may well be present in parent propagating source trees without showing any visible symptoms, and may be carried in the propagating wood or seed taken from such infected trees.

It is known that some 20 viruses produce disease in cherry trees. They cause damage to the leaves, branches, and fruit, all of which reduces productivity as well as longevity of the individual orchard trees grown from infected nursery stock. For, once an orchard is infected, it is a lifetime problem, since there is yet no known way of curing it.

To find a solution for this vital matter, it has been necessary to make extensive searches for virus-free propagating source trees of the commercial cherry varieties and to develop methods of growing and maintaining nursery stock produced from them—also to avoid known virus diseases until the stock is ready for marketing.

To be eligible for certification, cherry tree stock must be grown under rigid rules. These rules require that both visual inspections and tests be made on indicator "guinea pig" test plants. Official tags and seals of verification cannot be attached to stocks which do not meet the requirements. These procedures were adopted in official regulations of the California Department of Agriculture.

Further, regulations require that nursery stock be properly identified from the time propagating wood or seed is collected from the parent mother tree until the purchaser buys the finished product in the form of a tree. This minimizes chances of mix-ups in variety and assures buyers that trees are free of serious virus diseases.

Nurserymen who grow such superior stock profit in several ways: not only because of its increased marketability, but in its higher selling price which is as much as 50 cents per tree more than noncertified stock brings. Also, the use of healthy propagating material in growing this stock results in better bud survival and in more uniform and vigorous growth in the nursery row. Nurserymen are also able to produce more top grade trees per foot of nursery row.

By using certified cherry planting stock for establishing new orchards, or as replants, commercial orchardists are able to cut annual production cost on their long-term investment, and at the same time be more certain of success.

Healthy planting stocks survive better and make more vigorous and more rapid growth in the orchard. This results in a more uniform planting which becomes productive at an earlier age.

In the use of such stock, orchardists also avoid introduction of virus diseases into their orchards and reduce the risk of planting off-variety trees which often cannot be recognized until their fruiting age is reached.

In the years ahead, it is anticipated that the marketability of nursery tree stocks will be more and more influenced by their freedom from viruses. A leading California nurseryman was recently quoted as saying:

"Actually, we are pretty ignorant about viruses, even if we are miles ahead of what the industry was 10 or 20 years ago. We have come a long way when you stop to consider we were breeding up virus carriers in some cases through our own ignorance a generation or two back."

Further, he said "I'm looking forward to the day when we can have full certification on stone fruit nursery stock. It's even possible [that] some day it will be illegal to sell noncertified trees."

The certification program on cherry tree nursery stock in California is administered by the California Department of Agriculture.

Funds received from the Agricultural Marketing Service, U.S. Department of Agriculture, under its Matching Fund Program, helped make it possible to develop the methods of certification through which California nurserymen can now offer certified cherry nursery stock for sale.

Certification of nursery stock is another step in the continuous marketing program aimed at getting better quality fruits to market. It benefits both producer and consumer by putting the California cherry growers in a better position to meet the present day demands of consumers for high-quality farm products.

Mr. Wagnon is a plant pathologist in the Bureau of Plant Pathology, California Department of Agriculture. Mr. Stout is Chief of the Bureau.

An Air Door For Cold Storagehouses

STORAGE and packinghouse operators can now keep the heat out of their cold storage rooms while the doors are left open during handling operations.

The solution is an air door, made up of a wall of air flowing across the opening of the cold storage room. It cuts down the danger of collision in the doorway, allows free movement of workers, and acts as an insulating curtain.

Concerned with the need for maintaining proper cooling temperatures in storage houses at all times, AMS marketing researcher Glenn O. Patchen, in cooperation with the Skookum Packers Assn., Wenatchee, Washington, tested different methods of keeping the cold air in while the doors stayed open. He found that secondary doors now in use were expensive and suffered from the hard knocks of forklift trucks passing through them.

On the other hand, air doors which have been used in department stores, some cold storages, and other conventional buildings, eliminate many door hazards by giving the operator of the forklift truck a clear opening with unobstructed vision. They also limited air exchange to a minimum.

Using the air door principle and making some modifications, an air door was built for the AMS test. Preliminary results show that it has effectively kept the warm air from entering the cold storage room of an apple packinghouse.

Accidents are reduced when operator has clear view through the door at all times.

Air enters the openlouvered grill and moves out across the opening.

The system tested passes a wall of air horizontally across the opening. This avoids the need for a pit in the floor and underground ducts—which are necessary with an up-and-down flow of air.

To spread air evenly across the face of the door it is necessary to have an enclosed ductwork with an open louvered grill down one side of the opening, and an open duct down the other side. An enclosed duct across the top of the door houses the motor and fan which circulates the air within the duct system.

When the air door is in operation, the system works like an electrical circuit. The motor and the fan at the top of the door starts the air moving. Air then flows around the side through the closed ductwork, enters the open louvered grill, and moves out, like a wall, across the opening. It enters the open duct at the other side, flows to the top of the doorway, and starts its round trip all over again.

Air is not supposed to leave the air stream as it crosses the doorway. If air did leave the stream, it would be like having a crack in the wall. So the louvers must be properly adjusted. And the air has to flow out evenly from the whole face of the louver.

The strength of the air door is determined by the speed of the air stream. Researchers report that an air velocity of at least 200 feet per minute is needed to seal effectively an 8-foot-wide door opening. The speed would increase with the width of the door opening and if the door is in a position where strong winds hit it.

Although tests are not yet complete, researcher Patchen estimates the cost of installing an air door at about $500. This includes all labor and material.

While the results of the air door tests may prove to be a major improvement in cold storage and packinghouse operations, it is only one in a series of continued efforts by USDA's marketing researchers to improve the efficiency of getting farm products to the consumer.

Operators of cold storages and packinghouses gain directly from this work. But the farmer also gains, indirectly, when his products end up in the shoppers' basket in the same condition as they were when harvested.

For more information on the air door and other marketing research performed by USDA write to the *Marketing Information Division, AMS, USDA, Washington 25, D. C.*

Testing air flow pattern with paper streamers tied to a wire enables operator to adjust the vanes in louvers.

Customer Traffic in Retail Produce Departments

RETAILERS who want customers to shop more of their produce departments can get some hints from AMS marketing researchers Dale L. Anderson and Paul F. Shaffer.

Anderson and Shaffer ran a series of tests using customer shopping pattern studies. They measured produce sales, shopping time, how much of the department the customers shopped, and the problem of congestion.

Over 7,000 of these traffic patterns in 35 stores were analyzed. Stores with small departments and produce displayed on only one side of the aisle were not included in the study. Here are some of their findings:

Food shoppers take longer to spend a dollar in the produce department than in any other section of the store. The studies showed that each shopper spent from 3 to 3½ minutes in the produce department.

But the main question was how customers spent that three minutes. Researchers Anderson and Shaffer found in general, in the stores they studied, to make the best use of customers' shopping time, display areas have to be laid out to encourage "bounce" traffic—alternate side of the aisle shopping.

Bounce, it was found, is not encouraged by the island display commonly used in produce operations. Aisles with islands down the center often become congested.

In some tests run in stores with and without islands, sales were better without the islands. This happened even though the counter display area was about 13 percent greater with the islands.

The problem the market researchers ran into was the two secondary aisles formed when a major aisle is split by island displays. They found that fewer than a quarter of the shoppers went down both aisles—the bulk shopped only half the department.

In short, then, some disadvantages to the island display in produce departments were found. The researchers then wanted to find a display system that would reduce the weak points of islands while still using their good points.

They ran tests using something similar to the islands but located against the counters on opposite sides of the aisle in staggered positions. They called these: "Alternating extensions."

Alternating extensions were checked against two other aisle layouts: island displays and a clear aisle. Tables were used down the center of the aisles to form standard islands or on alternate sides of the aisles to form alternating extensions.

Except in very narrow aisles, sales per customer were highest when the extension display layout was used. While narrow aisles showed more "bounce" when they were clear, wide aisles got better bounce traffic when extensions were used.

Extensions not only attracted customers to their offerings, they also helped out the displays across the aisle. Total sales from all other displays also increased.

Sales were affected by congestion in the produce aisles. Researchers found that sales per person dropped drastically when customers could not move freely. To ease congestion, aisle width has to be designed to meet traffic needs.

Designing displays on the end section of an aisle was found to have some drawbacks. When compared to the standard front displays, the ends sold about 55 percent as much produce.

End displays, shopping habits, congestion, "bounce" traffic—they are all part of the agricultural marketing system. And research aimed at these subjects helps the marketing system to operate more efficiently.

The proper location of the produce department has a definite bearing on sales volume. And the proper equipment and merchandising techniques put more efficiency in marketing . . . more "bounce" and "buy" in the food shopper.

AMS study showed shoppers take longer to spend a dollar in produce department than in any other section of the store.

To make best use of customer's shopping time, display area should encourage shopping on both sides of the aisle.

International Group Working Toward

World Standards For Dairy Products

Harold Meister, at right, is U. S. delegate. Russell Strobel, (left) is the alternate.

By HAROLD E. MEISTER

THOUGH disarmament and test ban talks may stall, another group is doing very well indeed in forging international understanding.

This is a committee known as "Government Experts on the Use of Designations, Definitions, and Standards for Milk and Milk Products." Working under the auspices of the Food and Agriculture Organization of the United Nations, the group has held four annual meetings in Rome. Delegates from 21 countries, including the U.S., attended these sessions.

For the dairy industry, agreements being hammered out at these meetings are a tremendous step forward in facilitating world trade.

For consumers the world around, this mutual understanding means protection against product misrepresentation and against confusion resulting from the use of differing terms to designate milk and milk products—major foods for many peoples.

These benefits apply only to the extent that the government of each country accepts the agreements reached at Rome and conducts trade in dairy products under those terms.

Success along this line has been even better than might have been expected considering the wide divergence between countries in politics, culture, and industry.

As of March 1961, when the last meeting of the committee of experts was held, 37 FAO member countries had accepted the basic "Code of Principles" worked out by the committee during its 1958 and 1959 meetings. For the United States, acceptance must come from individual States— so far 32 State Commissioners of Agriculture have indicated general acceptance of the Code of Principles for their States.

No State has rejected the Code.

The Code of Principles lays the groundwork for international understanding and the development of world standards. It answers such basic questions as: What types of products shall carry the well-established dairy names? How shall these products be labeled so as not to cause confusion to the consumer?

Six "Articles" make up the Code. The first four define "milk," "milk products," "composite products," and "other products." Article 5 sets forth provisions for labeling the products defined in the first four Articles and Article 6 deals with application of the Code.

The provisions of the Code apply to all the products mentioned, whether imported, exported, or produced and offered for sale in the home market. The Code is not intended to affect the adoption and use of more rigorous requirements under domestic legislation.

The first draft of the Code was worked up by the International Dairy Federation, a trade group with memberships in 23 countries (the U.S. is not among them, although the U.S. dairy industry is now discussing membership). Consideration of this draft was the first order of business for the committee of experts at its initial meeting in September 1958. Agreement did not come quickly or easily.

The stickiest point was in defining "other products" under Article 4—those that are not (1) milk, (2) a milk product (derived exclusively from milk), nor (3) a composite product (a milk product with added components—such as flavored milk, cheese with added foods, milk candies, and ice cream).

The intention of Article 4 was to prevent the use of dairy terms and descriptions in connection with non-milk products like margarine and filled milk (a product which combines nonfat milk solids with a fat other than milk fat).

But the experts could not agree on the article's application or the scope of its restrictions. Some wanted to outlaw the manufacture of filled milk —others felt the need to recognize that filled products do exist and that there may be a need for them under some conditions. To the latter group, the important point was whether or not these products were properly labeled and advertised so as not to confuse or mislead the consumer.

The first meeting was adjourned with the controversy unsettled. But a draft of the code was sent to FAO member governments for their comments and suggestions. After reviewing these at its 1959 meeting, the committee produced an Article (4) acceptable to all.

The article gives major emphasis to protecting the consumer from misrepresentation and confusion. No product which is not milk, a milk product, or a composite product may be designated, advertised, or presented in any way which might lead the purchaser or consumer to believe it is a milk product. Products that might confuse the consumer must bear the word "imitation" in front of the name, as in "imitation cream," or must carry a distinctive name or description showing the true nature of the principal raw materials used.

The committee did not accept "filled milk" as a correct designation. But it did accept "margarine" and "vanaspati" (vegetable-fat ghee-type product of the Middle East) since no confusion could arise from their use.

Simultaneously with its agreement on the code, the Committee reached agreement on two of the composition standards—those for butter and for anhydrous butterfat. These were submitted to FAO member governments for their "earnest and sympathetic consideration."

Along with the wide acceptance of the Code, the committee was encouraged by the large number of governments that accepted these first two standards of identity as minimum standards for their countries, though this was not required of countries adopting the code.

The U. S., however, did not accept the standard for butter because of irreconcilable differences between our Federal law and the moisture requirement of the standard.

At the 1960 meeting, the committee reached agreement on composition standards for evaporated milk and sweetened condensed milk. These standards have now been accepted by about 18 countries, including the United States (subject to acceptance by the individual States).

This past spring, the committee agreed upon six standards for methods of test: those for sampling milk and milk products, determining acidity in butterfat, determining refractive index of butterfat, determining iodine value of butterfat, determining fat content of milk powder, and determining the fat content of natural and process cheese. These have been submitted to FAO member governments for acceptance.

The committee also provisionally adopted composition standards for dried milk (nonfat dry milk, dry whole milk, dry buttermilk, etc.) These have been sent to member governments for their comments, which will serve as the basis for further discussion at the next meeting of the committee in 1962.

Controversy on the dry milk standards centers around the minimum milk fat requirement for dry whole milk—whether it should be 24 or 26 percent. The compromise reached in the provisional standards calls for a minimum of 26 percent, effective on January 1, 1965.

Also discussed was a proposal for a composition standard applicable to all cheese varieties. This idea brought a protest from the U.S. delegation since such a standard would not be compatible with U. S. standards for individual varieties. As a result, major cheese-producing countries have now been asked to provide the FAO Secretary-General with descriptions and composition standards for the types of cheese they produce. These then will be considered by the committee at its 1962 meeting.

Ultimately, it is hoped, there will be uniform international standards for all dairy products entering world trade, as well as uniform methods of sampling and testing these products. In the future, the committee of experts may also study and recommend quality standards, minimum hygiene requirements for milk, and minimum specifications for plants manufacturing and processing milk and milk products.

Despite their different backgrounds and opinions, the dairy products experts from the far corners of the world continue to work toward these goals in a spirit of cooperation that might well be the envy of their political counterparts in the U.N. As one delegate put it during the debate on the proposed standards for cheese, although not without a hint of sarcasm, "In my country we have had these standards for 300 years—but perhaps we are out of date."

Copies of the Code and accepted standards may be obtained from the Dairy Division, AMS, USDA.

WHO SPEAKS FOR THE U.S.?

Two USDA men represent the United States at meetings of the international committee, "Government Experts on the Use of Designations, Definitions, and Standards for Milk and Milk Products."

Harold E. Meister, Chief of the Inspection and Grading Branch, Dairy Division, Agricultural Marketing Service, is our U.S. delegate. Alternate is D. Russell Strobel, Deputy Director of the Foreign Agricultural Service's Dairy and Poultry Division. Dr. William Horwitz, Chief of the Food Research Branch, the Food & Drug Administration, serves as advisor to the delegation.

Meister is chairman of a U.S. subcommittee on milk and milk products standards. Another AMS Dairy Division member, Ed Small, who is Chief of the Standards Branch, is secretary of the subcommittee. Other USDA agencies represented, in addition to AMS and FAS, are the Agricultural Stabilization and Conservation Service and the Agricultural Research Service. The Department of Health, Education and Welfare is represented by members from its Food and Drug Administration and Public Health Service.

The subcommittee works over the draft standards submitted to the various FAO member governments for their comments. In this way it incorporates the ideas of the U.S. dairy industry on what these standards should be.

The subcommittee then prepares "position papers" which, after approval by all agencies represented in the group and the Secretary of State, serve to guide the U. S. delegation in conducting negotiations at the Rome meetings.

From its inception, the subcommittee has kept the U.S. dairy industry informed on its activities and has sought industry advice on formulating the U.S. position.

Although the United States is one of the world's top dairy producers it is not represented in the trade organization, the International Dairy Federation, which prepares the first drafts of the proposed world standards. Therefore, the work of the subcommittee and the U. S. participation in the FAO "Committee of Experts" is all-important to U.S. dairy interests to assure maximum consideration of the U. S. viewpoint.

THE CHANGING MARKET

APPLES

The fall season opens with a broad variety of plentiful foods on the market. In especially abundant supply—and featured on the U. S. Department of Agriculture's Plentiful Foods List for October—are apples, potatoes, and broiler-fryers.

This year's apple crop will be 15 percent above that of 1960. So this is a good time to push apples—especially during National Apple Week, October 12 through 21.

Potatoes also will be in good supply this month. USDA estimates place this year's crop at more than 192 million hundredweight. With a harvest of this size in the offing, prices will be low to moderate.

And, in the poultry department, broiler-fryers continue to be a good buy. High marketings in October will bring extremely low prices to producers, and this will be reflected at the wholesale and retail levels.

The U. S. Department of Agriculture is giving special emphasis this month to cheese and rice. Tie-in sales and promotion of these items with other plentifuls will get a big push from both Government and industry.

Also plentiful in October—and on the USDA list—are turkeys, beef, cranberries, vegetable fats and oils.

CAROTENE

Carotene—a yellow to red pigment found in various plants—is just as important as its name sounds.

That's because it's a vital substance in the dark green leafy vegetables which we eat. Carotene supplies approximately three-fifths of the vitamin A values in the normal diet. But this invaluable component can be lost unless these vegetables are properly handled after harvesting.

AMS marketing researchers Boyce D. Ezell and Marguerite S. Wilcox recently studied the amount of carotene loss by subjecting four vegetable crops— kale, collards, turnip greens, and rape—to different degrees of wilting at varying temperatures.

The conditions surrounding these vegetables from time of harvesting until they reach the consumer determines, to a large degree, what part of the harvest-time vitamin values will be available to the consumer, the marketing researchers learned.

Temperature and humidity are the prime factors in the preservation of these four vegetables. Both wilting and unfavorable temperature hastened the loss of carotene content, but unfavorable temperature proved the more destructive of the two conditions.

Low temperatures also retard normal metabolic changes and development of pathogenic organisms. Low humidity, or rapid air movement, or a combination of both, often causes wilting and, therefore, a less attractive product.

AMS marketing researchers concluded that kale, under conditions that prevent appreciable wilting, will lose about a fourth of its carotene content when held at 32° F. for 4 weeks, or at 70° F. for 1 day. Wilting will increase these losses up to about 30 percent at 32°F. and 30 to 40 percent at 70° F.

Similar results could be expected with turnip greens and rape, but with somewhat even greater losses in collards.

How can the loss of carotene be combated? According to AMS marketing researchers, prepackaging in plastic films will effectively reduce the loss of moisture and preserve a fresh, crisp appearance, but a low temperature is also necessary to preserve the vitamin A values normally present in the vegetables.

COTTON

The cotton warehouse industry and other cotton bale handlers will be interested in USDA's new color film, "Modern Methods and Equipment for Handling Bales of Cotton."

The film shows the latest methods and equipment for cotton unloading, weighing, sampling, transporting, stacking, breakout, feeding the

- Apples Featured on Plentiful Foods List
- Loss of Carotene in Fresh Vegetables
- A Motion Picture on Cotton Warehousing
- Transportation of Hanging Beef in Refrigerated Cars
- Costs in Marketing Margarine

dinky press, and loading.

A number of developments such as temporary working blocks, electronic scales, breakout devices and extractors, automatic dinky press feeder, and improved facility design features are included in this film.

For information on buying or borrowing the film, write to Motion Picture Service, Office of Information, U. S. Department of Agriculture, Washington 25, D. C.

EXHIBIT

Six USDA exhibits depicting various aspects of poultry and egg marketing are pictured and described in a leaflet prepared by the Poultry Division, Agricultural Marketing Service.

Covering such subjects as inspection, grading, and quality and buying guides for consumers, the exhibits are made available by USDA for showing at trade and professional meetings, State and county fairs, and similar events.

The leaflet's description of each exhibit includes specifications on height, depth, aisle frontage, electrical requirement, and shipping weight. The leaflet also specifies what information should be included with each request for loan of an exhibit. Requests for loan, it emphasizes, should be made well in advance of showing.

The leaflet, "Poultry and Egg Marketing Exhibits," AMS-383, may be obtained by writing to the Marketing Information Division, Agricultural Marketing Service, U. S. Department of Agriculture, Washington 25, D. C.

HANGING BEEF

In the days of cattle drives in the old West, nobody worried much about keeping beef refrigerated in transit—they just wanted the beef to keep walking. Today however, marketing has developed to the point where the problem is not simply refrigeration, but what method is best.

During the past few years, mechanically refrigerated "piggyback" trailers (trailers on flatcars) and railroad cars have been used to move meat. Using a typical run between Lincoln, Nebraska, and Philadelphia, Pa., as a test, AMS researchers Harold Johnson, Robert Guilfoy, and Ronald Penney checked temperatures in two rail cars and four trailers every 2 to 3 hours, day and night.

One of the rail cars and all four trailers had cooling systems that blasted cold air directly into the load compartments. The second rail car's system blew cold air in an "envelope," or false wall and ceiling, around the load of hanging beef.

After a three-day trip, and a one- to three-day wait before unloading, the rail car with the "envelope" cooling system did the best job of cooling its load to the recommended temperatures of 32 to 34 degrees. The envelope car had a temperature spread of only from 33 to 34 degrees. The other five vehicles varied from about 28 to almost 44 degrees.

The marketing researchers concluded that beef temperatures are kept more uniform by distributing

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THE CHANGING MARKET

cold air around the load than by blasting air directly into the load.

In the case of the trailers, cooling would probably be improved by using ducts down each side at the ceiling. The semienvelope design seems to be good for rail cars.

MARGARINE

New Yorkers show a marked preference for high-priced brands of margarine, while housewives in southeastern States prefer low-cost brands to spread on their bread.

This point was one of the findings of a recent study on returns from marketing vegetable oils in margarine, made by Economic Research Service economist Virginia M. Farnworth.

Retail prices for margarine ranged from 15 to 39 cents a pound at the time of the study (1959). "Superbrands" and nationally advertised brands retailed near the top of this range while lower priced margarines retailed at an average price of 21 cents.

The more expensive brands accounted for three-fourths of all sales in New York City. Practically the reverse occurred in the Southeast, where lower priced margarines were two-thirds of retail sales.

Margarine is a prime domestic market for the soybean and cottonseed producer. A third of the domestic consumption of soybean oil is in the form of margarine; some 12 percent of our cottonseed oil is used in this way.

The proportion the farmer gets of the money the housewife spends on margarine depends, by and large, on the type of outlet, the brand, and the part of the country where it is sold. Where prices are high, the farmer's percentage is apt to be low. In 1960, the average return to the oilseed producer was 26 percent of the retail price.

Retail margins for margarine were generally highest for the higher priced spreads. For instance, the retail margin for the "super brands" in 1959 averaged 5.4 cents; the margin for the lower priced brands averaged 3.7 cents.

Retail prices, in general, were higher in metropolitan New York than in Chicago, Los Angeles, or the southeastern part of the U.S.

Many manufacturers assumed the wholesaler's function by selling directly to large retailers. Refining and hydrogenization also were handled frequently by the manufacturer.

In 1959, manufacturers and wholesalers together received from each pound package of margarine close to one half the average retail price.

Two-Wheel Handtrucks

(Continued from page 11)

quite similar to the one just described. The work assigned to transporters differed, though. Transporters exchanged a loaded handtruck for an empty one at the storage location and an empty one for a loaded one in the carrier. The use of additional handtrucks made this possible.

Two handtrucks for each transporter were adequate. An 8-man crew, using this better method, was assigned this way: 2 men to load handtrucks, 4 men to transport the loads, and 2 men to hand-stack in storage. Cost per carload for this method and crew was $12.73. A carload of lettuce would be unloaded in 47 minutes.

Although a 4-men crew would take 40 minutes longer to complete the job, costs would be reduced to $11.66 a carload. Using this particular method, the crew was assigned this way: one man loading handtrucks, 2 men transporting loads and one man hand-stacking in the storage area.

By using available equipment productivity and coupling it with efficient materials handling methods, costs can be cut and labor output increased without any additional investment in equipment. So, with a little common sense in planning, 2-wheel handtrucks can be made to produce.

Growth Through Agricultural Progress